

REMARKS

Reconsideration and allowance of the present application based on the following remarks are respectfully requested. Claims 2-4, 7, 11-15, 21, 23-25, 27 and 29-46 are pending in the present Application. Claims 14, 36 and 39 have been amended solely to correct minor clerical errors and the amendments are not intended to narrow the scope of these claims. New claim 46 has been added.

Applicants are appreciative of the courtesies extended by the Examiner to Applicants' representatives during the personal interview of March 7, 2003. The Examiner indicated that Figure 22A showed considerable structural differences with Gilchrist's conduit and that amendments concerning the embodiment of Figure 22A would be constructive. Therefore, Applicants have added new claim 46 reciting, *inter-alia*, "a labyrinth heat transfer space formed of a groove provided on at least two adjoining surfaces." Consequently, Applicants respectfully submit that claim 46 is in form for allowance.

Claim Objections

Claim 14 is objected to because claim 14 depends on claim 1 or 2. Applicants have amended claim 14 to depend only on claim 2. Therefore, Applicants respectfully request withdrawal of the objection to claim 14.

Claim 36 is objected to because of informalities. Applicants have amended claim 36 and deleted the item "(58; 126)." Therefore, Applicants respectfully request withdrawal of the objection to claim 36.

Claim Rejections 35 USC § 112

Claim 39 are rejected under 35 U.S.C. 112, second paragraph. Applicants have amended claim 39 and deleted the phrase "said labyrinth heat transfer space." Consequently, Applicants respectfully submit that all pending claims are in full compliance with 35 USC §112. Thus, Applicants respectfully request withdrawal of the rejection of claim 39 under §112, second paragraph.

Claim Rejections – 35 U.S.C. § 103

Claims 2, 14, 25, 29-31, 37, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heimanson *et al.* (US Pat. No. 5,775,416) in view of Gilchrist *et al.* (US Pat. No. 5,846,375). Applicants respectfully traverse this rejection for at least the following reasons.

The Office Action contends that Heimanson *et al.* teaches an electrode structure (chuck 20) with a conductor unit (24, stainless steel, col. 3, lines 24-25) and placement table (Figure 1) having a heater unit (28) therein; a cooling block (34) joined to the conductor unit and having a cooling jacket (38) which cools said electrode unit; a heat transfer space (50) provided on at least one of opposite surfaces of said conductor unit (Figure 1) and said cooling block; and conductor-side heat transfer gas supply means (92, 72, 76, 84) for supplying a heat transfer gas to the heat transfer space. The Office Action concedes that Heimanson *et al.* does not teach a heat transfer space formed by a concentric groove and does not teach a high-frequency source applying a high voltage to Heimanson *et al.*'s conducting unit. The Office Action contends, however, that Gilchrist teaches a similar electrode unit (15, Figure 1) and teaches a labyrinth transfer space (32A-D, Figure 1) formed by concentric grooves (Figure 2, 5) and that it would have been obvious to one of ordinary skill in the art to replace Heimanson et al heat transfer space with Gilchrist *et al.* labyrinth transfer space and use a high-frequency source to apply a high-frequency voltage to Heimanson *et al.* conducting unit as taught by Gilchrist *et al.* Applicants respectfully disagree. Applicants reiterate the arguments presented in the Response filed October 5, 2002. Specifically, Heimanson *et al.* merely describes "a second cavity 50" formed by the O-ring seal 44 and annular seat 46, together with the respective bodies 26 and 36 of the heating and cooling units 24 and 34 (see, Figure 1 and col. 3, lines 50-52 in Heimanson *et al.*). The second cavity 50 in Heimanson *et al.* is a simple space and does not form a labyrinth heat transfer space. Consequently, Heimanson *et al.* does not disclose, teach or suggest "a labyrinth heat transfer space formed by a concentric or spiral groove provided on at least one of opposite surfaces of said electrode unit and said cooling block," (emphasis added) as recited in claims 2, 37 and 40 or "a labyrinth heat transfer space formed by a concentric or spiral groove provided on at least one of opposite surfaces of said placement table and said cooling block," (emphasis added) as recited in claim 25. For example, as stated in page 7 of the specification, providing a labyrinth heat transfer space between the joining surfaces of the electrode unit and the cooling block, a high sealing effect for the heat transfer space formed between the electrode unit and the cooling block can be maintained in a high temperature range such as temperatures higher than 200°C.

With regard to Gilchrist *et al.*, this reference merely describes an electrode 14 having a cooling system imbedded in the body 15 of bottom electrode 14. The cooling system of Gilchrist *et al.* is comprised of conduits 32a, 32b, 32c and 32d which are embedded in the

body 15 of electrode 14 and a coolant, typically water, flows into each conduit 32a-32d (see, col. 4 lines 26-29).

Therefore, the cooling system of Gilchrist *et al.* simply constitutes "a cooling block" since a coolant circulates in the conduits which are formed in "the cooling block." Accordingly, Gilchrist *et al.* does not disclose or suggest that the conduits are formed on a surface of the cooling block much less than a labyrinth heat transfer space formed by a concentric or spiral groove provided on at least one of opposite surfaces of the electrode unit and the cooling block as recited in claims 2, 37 and 40 or provided on at least one of opposite surfaces of the placement table and the cooling block as recited in claim 25. Furthermore, there is no suggestion in the prior art for making such structure with the claimed combination of elements and even if one were to replace Heimanson *et al.* cavity 50 "heat transfer space" with Gilchrist *et al.* conduits 32a, 32b, 32c and 32 "labyrinth heat transfer space", which the Applicant does not concede, one would not obtain the labyrinth heat transfer space formed by a concentric or spiral groove provided on at least one of opposite surfaces of the electrode unit and the cooling block as recited in claims 2, 37 and 40 or provided on at least one of opposite surfaces of the placement table and the cooling block as recited in claim 25. Indeed, one would simply obtain a cooling system as taught in Gilchrist *et al.* with conduits 32a, 32b, 32c and 32d embedded inside the body 36 or imbedded inside the body 26 of Heimanson *et al.*

Consequently, for at least above reasons, neither Heimanson *et al.* nor Gilchrist *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claims 2, 25, 37 and 40.

Therefore, Applicants respectfully submit that claims 2, 25, 37 and 40, and claims 14, 29-31, and 41 which are dependent therefrom, are patentable and respectfully request that the § 103(a) rejection of claims 2, 14, 25, 29-31, 37, 40, and 41 be withdrawn.

Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* and Gilchrist *et al.* in view of McMillin *et al.* (US Pat. No. 5,835,334). Applicants respectfully traverse this rejection for at least the following reasons.

Claims 3 and 4 are directly or indirectly dependent from claim 2. Therefore, for at least the reasons presented above for claim 2, Applicants submit that claims 3 and 4 are patentable over Heimanson *et al.* and Gilchrist *et al.*

McMillin *et al.* fails to overcome the above noted deficiencies of Heimanson *et al.* and Gilchrist *et al.*. Therefore, Applicants respectfully request submit that none of the prior

at references, Heismanson *et al.*, Gilchrist *et al.* and McMillin *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claims 3 and 4 and respectfully request that the rejection of claims 3 and 4 under § 103(a) be withdrawn.

Claims 7 and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* and Gilchrist *et al.* in view of Shamouilian *et al.* (US Pat. No. 5,745,331). Applicants respectfully traverse this rejection for at least the following reasons.

Claims 7 and 27 are dependent from claims 2 and 25, respectively. Therefore, for at least the reasons presented above for claims 2 and 25, Applicants submit that claims 7 and 27 are patentable over Heimanson *et al.* and Gilchrist *et al.*.

Shamouilian *et al.* fails to overcome the above noted deficiencies of Heimanson *et al.* and Gilchrist *et al.*. Therefore, Applicants respectfully request submit that none of the prior at references, Heismanson *et al.*, Gilchrist *et al.* and Shamouilian *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claims 7 and 27 and respectfully request that the rejection of claims 7 and 27 under § 103(a) be withdrawn.

Claims 11, 12, 23 and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* in view of Sherman (US Pat. No. 5,535,090) and Mori *et al.* (US Pat. No. 5,935,460). Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action Heimanson *et al.* is silent about "a heat resistant metal seal member for sealing an electrode-side heat transfer space formed between said electrode unit and said cooling block" as recited in claim 11 or claim 23.

The Office Action contends Sherman teaches an electrostatic chuck with seal members 28 that can be metallic. Applicants respectfully disagree.

Sherman merely teaches that the seal member 28 seals the reactor wall 29 to the metal plate 4 of the chuck metal base 12. Sherman is completely silent about a metal seal member for sealing an electrode-side heat transfer space formed between the electrode unit and the cooling block.

Mori *et al.* merely teaches a nickel fluoride insulator coating. Moreover, there is no suggestion in the prior art for making such structure with the claimed combination of elements disclosed in the prior art. Consequently, none of Heimanson *et al.*, Sherman and Mori *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claim 11 or claim 23.

Therefore, for at least the above reasons, Applicants respectfully submit that claims 11 and 23, and claims 12 and 24 which are dependent from claims 11 and 24, respectively, are patentable and respectfully request that the rejection of claims 11, 12, 23 and 24 under § 103(a) be withdrawn.

Claims 21 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* in view of Sherman and Mori *et al.* Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action Heimanson *et al.* is silent about “a heat resistant metal seal member for sealing an electrode-side heat transfer space formed between said electrode unit and said cooling block” and Heimanson *et al.* is silent about “said heat resistant metal seal member is covered by a soft metal film of a material having a softening point lower than a process temperature of said object to be processed,” as recited in claim 21.

The Office Action contends Sherman teaches an electrostatic chuck with seal members 28 that can be metallic. Applicants respectfully disagree.

Sherman merely teaches that the seal member 28 seals the reactor wall 29 to the metal plate 4 of the chuck metal base 12. Sherman is completely silent about a metal seal member for sealing an electrode-side heat transfer space formed between the electrode unit and the cooling block. Indeed, Sherman does not disclose, teach or suggest a heat transfer space much less the relationships between the elements in the claim as recited in claim 21.

Mori *et al.* merely teaches a nickel fluoride insulator coating. Moreover, there is no suggestion in the prior art for making such structure with the claimed combination of elements disclosed in the prior art. Consequently, none of Heimanson *et al.*, Sherman and Mori *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claim 21.

Claim 22 has been cancelled without prejudice or disclaimer.

Therefore, for at least the above reasons, Applicants respectfully submit that claim 21 is patentable and respectfully request that the rejection of claim 21 under § 103(a) be withdrawn.

Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* and Gilchrist *et al.* in view of Niori *et al.* (US Pat. No. 5,800,618). Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action Heimanson *et al.* and Gilchrist *et al.* do not teach an electrode unit having a ceramic heater unit therein. Moreover, claim 2 is dependent from claim 2 and for at least the reasons presented above for claim 2, Applicants submit that claim 13 is patentable over Heimanson *et al.* and Gilchrist *et al.*

Niori *et al.* fails to overcome the above noted deficiencies in Heimanson *et al.* and Gilchrist *et al.* Therefore, Applicants respectfully request submit that none of the prior art references, Heismanson et al, Gilchrist *et al.* and Niori *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claim 13 and respectfully request that the rejection of claim 13 under § 103(a) be withdrawn.

Claim 15 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* and Gilchrist *et al.* in view of Ishii (US Pat. No. 5,529,657). Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.* and Gilchrist *et al.* do not teach that the electrode structure is an upper electrode unit positioned above the object to be processed. Moreover, claim 15 is dependent from claim 2 and for at least the reasons presented above for claim 2, Applicants submit that claim 15 is patentable over Heimanson *et al.* and Gilchrist *et al.*

Ishii fails to overcome the above noted deficiencies in Heimanson *et al.* and Gilchrist *et al.* Therefore, Applicants respectfully request submit that none of the prior art references, Heismanson et al, Gilchrist *et al.* and Ishii disclose, teach or suggest, alone or in combination, the subject matter recited in claim 15 and Applicants respectfully request that the rejection of claim 15 under § 103(a) be withdrawn.

Claim 32 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* in view of Sherman, McMillin *et al.* and Gilchrist *et al.* Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.* does not teach seal members are metallic and does not teach the stainless steel member in Heimanson *et al.* as being made of an electrically insulating material with a coefficient of thermal conductivity of 80 W/mk. Furthermore, as conceded in the Office Action, Heimanson *et al.* does not teach an insulating member divides the heat transfer space into an upper and a lower space. Moreover, Heimanson *et al.* is silent about “an electrode unit having a heater unit therein.” The heater unit 24 in Heimanson *et al.* merely heats wafer 18 and Heimanson *et al.* does not provide the

chuck 20 with an electrical connection, i.e. there is no electrode unit in the chuck of Heimanson *et al.*

With regard to Sherman, this reference merely teaches an electrostatic but fails to teach or suggest the additional elements recited in claim 32. Specifically, Sherman does not teach, disclose or suggest an insulating member that divides a heat transfer space into an upper and a lower space.

The Office Action contends that McMillin teaches an electrically insulating material being aluminum nitride as a component of the chuck and thus it would have been obvious to one of ordinary skill in the art to replace Heimanson's organic seal member 44 with a metallic seal member as taught by Sherman and to use aluminum nitride material instead of Heimanson's stainless steel for an insulating material as taught by McMillin and it would have been obvious to one of ordinary skill in the art to provide additional o-ring seals between the cooling block and the aluminum nitride insulating member such that the insulating member divides the heat transfer space into an upper and a lower space.

Applicants respectfully disagree.

Adding o-ring seals into Heimanson's o-ring seal 44 between the cooling block 34 and member 48 and the steel plate member 36 (substituted in the Office Action with aluminum nitride insulating member) would not divide the cavity 50 (referred to in the Office Action as "heat transfer space") into two spaces. Moreover, there is no suggestion in the prior art for making such electrode structure with the claimed combination of elements disclosed in the prior art.

Therefore, Applicants respectfully submit that none of the prior art references, Heismanson *et al.*, Gilchrist *et al.* and McMillin disclose, teach or suggest, alone or in combination, the subject matter recited in claim 32 and respectfully request that the rejection of claim 32 under § 103(a) be withdrawn.

Claim 33 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* in view of Gilchrist *et al.*, and McMillin *et al.* Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.* does not teach seal members are metallic and does not teach the stainless steel member in Heimanson *et al.* as being made of an electrically insulating material with a coefficient of thermal conductivity of 80 W/mk. Furthermore, as conceded in the Office Action, Heimanson *et al.* and Gilchrist do not teach an insulating member divides the heat transfer space into an upper and a lower space.

However, the Office Action contends that McMillin teaches an electrically insulating material being aluminum nitride as a component of the chuck and thus it would have been obvious to one of ordinary skill in the art to use the aluminum nitride material instead of Heimanson's stainless steel for an insulating member and it would have been obvious for Heimanson, Gilchrist and McMillin to provide additional o-ring seals 44 between the cooling block and the aluminum nitride insulating member such that the insulating member divides the heat transfer space into an upper and a lower space. Applicants respectfully disagree.

As stated above, with regard to claim 32, Adding o-ring seals into Heimanson's o-ring seal 44 between the cooling block 34 and member 48 and the steel plate member 36 (substituted in the Office Action with aluminum nitride insulating member) would not divide the cavity 50 (referred to in the Office Action as "heat transfer space") into two spaces. Moreover, none of the prior art references discloses, teaches or suggest, alone or in combination, a labyrinth heat transfer space formed by a concentric or spiral groove provided on at least one of the opposite surfaces of the electrode unit and the cooling block.

Therefore, Applicants respectfully submit that none of the prior art references, Heismanson *et al.*, Gilchrist *et al.* and McMillin disclose, teach or suggest, alone or in combination, the subject matter recited in claim 33. Thus, it is respectfully requested that the rejection of claim 32 under § 103(a) be withdrawn.

Claim 34 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* in view of Sherman and Husain *et al.* (US Pat. No. 5,548,470). Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.* does not teach a contact rate between interfacing surfaces of the structures.

Moreover, as stated above, Heimanson does not teach or suggest an electrode unit having a heater unit therein and Heimanson does not teach or suggest a heat resistant metal seal member for sealing an electrode-side heat transfer space formed between the electrode unit and the cooling block. Specifically, in Heismanson, the seal 44 is merely disposed to seal plate 36 to member 48. Husain *et al.* and Sherman fail to overcome the deficiencies noted in Heimanson *et al.* Therefore, Applicants respectfully request submit that none of the prior art references, Heismanson *et al.*, Sherman and Husain *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claim 34 and respectfully request that the rejection of claim 34 under § 103(a) be withdrawn.

Claims 35 and 44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* and Gilchrist *et al.* in view of Husain *et al.* Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.* and Gilchrist do not teach a contact rate between interfacing surfaces of the structures.

Moreover, as stated above, Heimanson does not teach or suggest an electrode unit having a heater unit therein. Furthermore, Heimanson is completely silent about providing a labyrinth heat transfer space formed by a concentric or spiral groove provided on at least one of the opposite surfaces of the electrode unit and the cooling block, as recited in claims 35 and 44. Gilchrist *et al.* and Husain *et al.* fail to overcome the deficiencies noted in Heimanson. Therefore, Applicants respectfully submit that none of the prior art references, Heismanson et al, Gilchrist *et al.* and Husain *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claims 35 and 44 and respectfully request that the rejection of claims 25 and 44 under § 103(a) be withdrawn.

Claims 36 and 38 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* in view of Sherman. Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.* does not teach metallic seal members. Moreover, as stated above, Heimanson does not teach or suggest an electrode unit having a heater unit therein and Heimanson does not teach or suggest a heat resistant metal seal member for sealing an electrode-side heat transfer space formed between the electrode unit and the cooling block. Specifically, in Heimanson, the seal 44 is merely disposed to seal plate 36 to member 48. Sherman fails to overcome the deficiencies noted above in Heimanson *et al.* Therefore, for at least the above reasons, Applicants respectfully submit that none of the prior art references, Heimanson et al, Sherman and Husain *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claims 36 and 38 and respectfully request that the rejection of claims 36 and 38 under § 103(a) be withdrawn.

Claim 39 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* and Gilchrist *et al.* in view of Sherman. Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.* and Gilchrist *et al.* do not teach a ca metallic seal member.

Moreover, Applicants submit that claim 39 is dependent from claim 38. Therefore, for at least the above reasons presented for claim 38, Applicants respectfully submit that claim 39 is patentable respectfully request that the rejection of claim 39 under § 103(a) be withdrawn.

Claim 42 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.*, Sherman, and Gilchrist *et al.* in view of Lei *et al.* (US Pat. No. 5,556,476). Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.*, Sherman, and Gilchrist *et al.* do not teach a gas blower to provide a release of heat. Moreover, as stated above, Heimanson does not disclose or suggest an electrode unit having a heater unit therein and Heimanson *et al.* does not disclose or suggest a heat resistant metal seal member for sealing an electrode-side heat transfer space formed between the electrode unit and the cooling block. Specifically, in Heimanson, the seal 44 is merely disposed to seal plate 36 to member 48. Furthermore, none of the prior art references Heimanson *et al.*, Sherman, Gilchrist and Lei *et al.* disclose or suggest “the center of the electrode unit is held by a hollow column, and a gas blower is provided in the column for promoting release of heat by blowing a gas toward the center of a back surface of the electrode unit.” Lei *et al.* merely provides a cooling fan and water as coolant to reduce the temperature of components consisting of sleeve 96, transfer case 88, transfer ring 102 during substrate processing. Thus, Lei *et al.* does not promote release of heat by blowing a gas toward a back surface of an electrode unit.

Therefore, Applicants respectfully submit that none of the prior art references, Heismanson *et al.*, Sherman, Gilchrist *et al.* and Lei *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claim 42 and Applicants respectfully request that the rejection of claim 42 under § 103(a) be withdrawn.

Claims 43 and 45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Heimanson *et al.* and Gilchrist *et al.* in view of Lei *et al.* Applicants respectfully traverse this rejection for at least the following reasons.

As conceded in the Office Action, Heimanson *et al.* and Gilchrist *et al.* do not teach a gas blower to provide a release of heat. Moreover, as stated above, Heimanson does not disclose or suggest an electrode unit having a heater unit therein and Heimanson *et al.* does not disclose or suggest a heat resistant metal seal member for sealing an electrode-side heat transfer space formed between the electrode unit and the cooling block. Specifically, in

Heimanson, the seal 44 is merely disposed to seal plate 36 to member 48. Furthermore, none of the prior art references Heimanson *et al.*, Gilchrist *et al.* and Lei *et al.* disclose or suggest "the center of the electrode unit is held by a hollow column, and a gas blower is provided in the column for promoting release of heat by blowing a gas toward the center of a back surface of the electrode unit." Furthermore none of the prior art references Heimanson *et al.*, Gilchrist *et al.* and Lei *et al.* disclose, teach or suggest "a labyrinth heat transfer space formed by a concentric or spiral groove provided on at least one of opposite surfaces of the electrode unit and the cooling block." As recited in claims 43 and 45.

Therefore, Applicants respectfully submit that none of the prior art references, Heismanson *et al.*, Sherman, Gilchrist *et al.* and Lei *et al.* disclose, teach or suggest, alone or in combination, the subject matter recited in claims 43 and 45. Thus, Applicants respectfully request that the rejection of claims 43 and 45 under § 103(a) be withdrawn.

CONCLUSION

In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

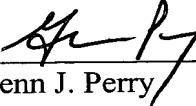
Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned "Version with markings to show changes made".

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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Enclosure: Appendix

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

14. (Amended) The electrode structure as claimed in claim [1 or] 2, [characterized in that] wherein said heater unit [(44; 116)] is divided into concentric zones, and the divided zones are controllable on an individual basis.

36. (Amended) An electrode structure used in a plasma processing apparatus which performs a predetermined process on an object to be processed by using a plasma in a process chamber in which a vacuum can be formed, the electrode structure, comprising:

an electrode unit having a heater unit therein;

a cooling block joined to the electrode unit and having a cooling jacket [(58; 126)] which cools said electrode unit;

a heat resistant metal seal member for sealing an electrode-side heat transfer space formed between said electrode unit and said cooling block; and
electrode-side heat transfer gas supply means for supplying a heat transfer gas to said electrode-side heat transfer space, wherein said heater unit is divided into concentric zones, and the divided zones are controllable on an individual basis.

39. (Amended) The electrode structure as claimed in claim 38, wherein at least one of said electrode-side heat transfer space, [said labyrinth heat transfer space] and said chuck-side heat transfer space is provided with a heat resistant pressure sensor, and an amount of gas supplied by said corresponding heat transfer gas supply means is controlled based on an output of the heat resistant pressure sensor.

End of Appendix